

Patent Claims

1. Method for operating a sensor for determining the concentration of oxidizing gases in gas mixtures, especially of the nitrogen oxide concentration in exhaust gases of internal combustion engines, wherein the sensor includes:

5 at least one chamber (1; 2) mounted in a solid state electrolyte (20), the chamber being connected to the gas mixture via a first diffusion barrier (4);

 a second chamber (3) arranged in the solid state electrolyte (20) and the chamber having a pregivable constant
10 oxygen partial pressure;

 on the solid state electrolyte, an oxygen pump electrode (9) subjected to the exhaust gas; a further oxygen pump electrode (7; 8) as well as an NO pump electrode (10) in the at least one chamber (1; 2); and an oxygen reference electrode (6)
15 arranged in the second chamber (3);

 and at least a voltage is made available at the electrodes and at least a pump current is evaluated as a measurement signal, characterized in that:

 the voltages (U_{IPE} ; U_{O_2} ; U_{NO}), which are applied to the
20 electrodes, are changed in dependence upon the currents, which flow in the electrode feed lines and/or between the electrodes (6; 7; 8; 9; 10), during operation of the sensor in such a manner that the voltages correspond to pregivable desired values, these voltages being applied to the
25 electrodes (6; 7; 8; 9; 10) in the interior of the sensor.

2. Method of claim 1, characterized in that one adds voltages to the voltages applied to the electrodes, these added voltages

corresponding to a feedback of voltage components weighted with factors (K1, K2, K3, K4, K5, K6) which voltage components are proportional to the currents, which flow in the electrode feed lines and/or between the electrodes (6; 7; 8; 9; 10) during operation of the sensor and/or are proportional to the sliding mean values of the voltages, which are proportional to the currents and which are formed by means of electric circuit elements and/or the derivatives of higher order and/or their sliding mean values or linear combinations thereof.

3. Method of claim 1 or 2, characterized in that one increases at least one of the factors (K1, K2, K3, K4, K5, K6) so long until an oscillation occurs because of the feedback and that one slightly reduces this factor (K1, K2, K3, K4, K5, K6) by an amount determined experimentally so that just no oscillation occurs anymore.